International Harmonized Research Activities - Intelligent Transport Systems
Working Group Meeting
April 7-8, 1998. London, England

Minutes

Attendees:

Dr. Ian Noy (Chairman, Transport Canada, Canada)
Dr. Kåre Rumar (Swedish Road and Transport Research Institute, Sweden)
Mr. Daniel Augello (Renault, France)
Dr. August Burgett (NHTSA, U.S.)
Dr. med. B. Friedel (BASt, Germany)
Mr. Geoff Harvey (Department of Environment, Transport and the Regions, U.K.)
M. Lies Duynstee (Ministry of Transport, The Netherlands)
Mrs. Annie Pauzié (INRETS, France)
Mr. Jerry Kownacki, (Motor Transport Institute, Poland)
Mr. Kaneo Hiramatsu, (JARI, Japan)
Mr. Ray Kieffer (GM, U.S.)

1. Introduction.

On behalf of the WG, Ian Noy thanked Mr. Harvey of the Department of Environment, Transport and the Regions for hosting the meeting of the Working Group.

In response to a query on industry participation, Ian Noy confirmed that the IHRA Steering Committee decided to allow industry to participate on WG's. Official requests for participation should be directed through the Steering Committee. It was noted that this WG already has members from industry. In addition, the Chair has discretion to invite individual experts to serve on the WG and there are no arbitrary restrictions on who may participate. However, all members must be prepared to actively participate in collaborative research and on the WG.

2. Activities

2.1 Survey of Safety Research - Database.

Ian Noy reported that 47 survey have been received to date. These have been entered into a Microsoft Access database. Copies of the database will be available at ESV. It was noted that there are relevant research not currently captured in the database, some representing collaborative projects among European countries. WG members will continue to provide input to ensure that the database is as comprehensive as possible. In cases where several countries are involved in a collaborative project the responsibility for reporting the project rests with the WG members from the country of the project leader.

WG members indicated that additional surveys are in preparation. Members were asked to complete surveys and send to Ian Noy by May 15, at the latest, so that they can be included in the first version to be released at the ESV conference. However, the database will be maintained on an on-going basis.

Ian Noy will request NHTSA to consider setting up an IHRA web site. The database could then be put on the site and be available to anyone interested.

Dr. Friedel offered to check whether German colleagues could do some preliminary analyses of the database (e.g., to identify trends and centres of research).

2.2 Inventory of Research Projects

Ian Noy noted that to date only the U.S. has provided a list of current projects. Other members indicated they had no specific projects underway at this time suitable for collaboration. A discussion ensued about the value of continuing this activity. Several members stated that the list of projects was helpful to them and it was agreed to expand the inventory to include also ideas for projects; that is, projects that are in the early stages of definition or possible new projects for consideration.

It was felt that continuing this activity will assist the WG to identify possibilities for collaboration in the future. It was agreed that each WG member will identify additional projects that fall within the expanded scope. Since the WG has no resources of its own, each participant will be expected to fund its own activities.

It was noted that the original intention of IHRA was initiation of international research. A major obstacle to this is the fact that European projects are funded by the EC and are effectively closed to external partners. This issue will have to be addressed through high level negotiations. The best that can be done at present is to encourage and focus bi-lateral projects (that can be undertaken within the discretion of WG members) to address research needs of the WG. The WG can facilitate collaboration of this kind. However, for budgeting purposes funding requirements need to be identified about a year in advance.

2.3 Workshop

The workshop on ITS Safety Test and Evaluation, held last year in Berlin, was discussed. It was generally agreed that the workshop was very useful and should be followed up with a further workshop as a means for exchanging and exploring relevant information. However, a future workshop should have a tighter focus and be structured to produce a set of recommendations for research.

Kåre Rumar and Ray Kieffer tentatively agreed to help organize the workshop. However, a further meeting of the WG would be required to define more specifically the objectives and venue for such a workshop. It was agreed to discuss this item at the next meeting.

3. National Guidelines

A proposal to amend the ECE Consolidated Resolution on the Construction of Vehicles (R.E. 3) to include new “Guidelines for the Design and Installation of Information and Communication Systems in Motor Vehicles” was submitted to WP29 by German Experts. WP 29 deferred discussion on this proposal until June 1998. This proposal had been distributed to IHRA-ITS WG with previous minutes.

The WG was informed that the EU had adopted a "Code of Practice on HMI for In-Vehicle Information and Communication Systems" (copies were distributed at the meeting). In addition, the UK has developed a "Guide to In-Vehicle Information Systems" and The Motor Industry Software Reliability Association (MISRA) has published "Development Guidelines for Vehicle Based Software".

Keneo Hiramatsu agreed to review these various guidelines and identify similarities and differences with the Japanese guidelines.

EC DGX111 High Level Group on Telematics has developed a draft report, "Telematics and Intelligent Transport Applications for Road Safety".

4. Review of WG Mandate

The "Discussion Document" distributed by Ian Noy with the previous minutes and the "ITS Safety Assurance Standard: Draft Outline" distributed prior to the meeting were discussed in depth. The purpose of the draft outline was to present a conceptual model of ITS safety assurance, to identify the principal elements of a possible content and/or process oriented regulation, and to delineate the work of this WG within the overall framework of safety assurance. It was stressed that this WG is concerned with research - it is not a policy body. However, such a model is helpful in understanding how research could lead to policy and what areas of research should be targeted.

The mandate of the WG, as previously formulated, was reaffirmed, namely to develop procedures (including methods and criteria) for the evaluation of safety of in-vehicle information, control and communication systems with respect to human performance and behaviour and is intended to address cross-cutting issues rather than to focus on specific applications.

The following were specific comments related to the documents discussed:

- Need to clarify difference between summative and formative evaluations
- Need to better delineate role of this WG vis a vis other blocks in the model
- Need to evaluate systems in destination vehicles
- Need to include all in-vehicles systems which involve driver interaction
- Need to consider both autonomous and cooperative systems - key criterion is interaction with the driver
- Need to consider interactive effects of different ITS systems (e.g., ACC and Collision warning)
- Need to include behavioural adaptation, at least its short term effects
- Need to include failure mode analysis in evaluations
- Need to define driver and driving conditions to be tested (should it represent the average driver and normal driving conditions or include extreme levels?)
- Need to clarify that benchmarks are baseline levels or specific reference values (e.g., use of radio)
- Need to include a category of direct safety effects on driving as primary task

It was agreed that the main interest of this WG is to develop a framework for evaluating on-board ITS systems, as shown in the Safety Assurance Model. Specific plans for continued work are described below.

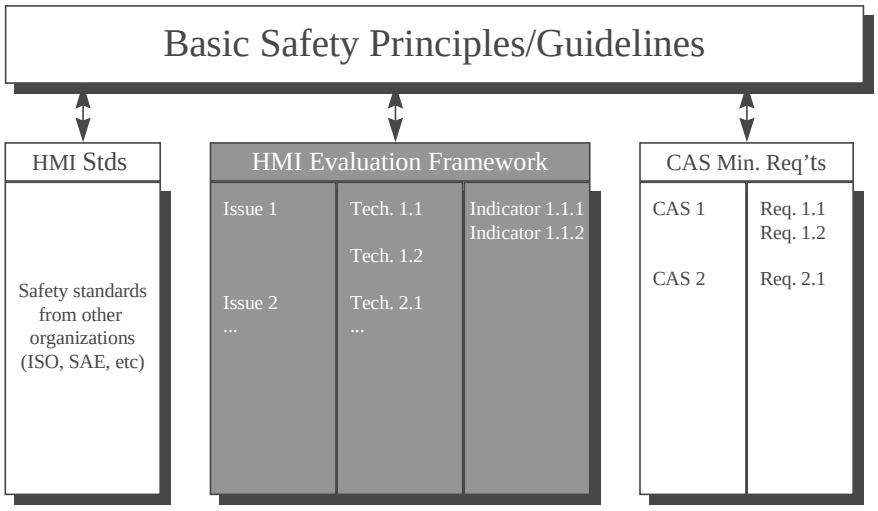

Figure 1: Principal Elements of ITS Safety Assurance

5. Plans

5.1 Documents

Ian Noy will revise and combine the "Discussion Document" and "ITS Safety Assurance Standard: Draft Outline", as per the discussions. A revised document will be distributed to WG members by May 15. Comments will be incorporated in a further revision which will be presented at ESV as part of the WG status report. It will also be distributed to other related groups.

5.2 Development of ITS Safety Test & Evaluation Framework

The main focus of WG research is the elaboration of the evaluation framework. After considerable discussion it was agreed to simplify the framework shown in Table 1. It is now based on four principal safety mechanisms; direct safety effects, behavioural adaptation, workload, and usability. Each of these categories represents a group of factors which can directly or indirectly influence safety.

The scientific literature provides a good start but it is clear that research is needed to resolve the many issues that remain, including, for example, determining relationships between indicators and safety.

ITS Safety Test & Evaluation Framework

Safety Mechanism	Conditions		Technique	Indicators/ Benchmarks
	Driver	Driving		
Direct Safety Effects (e.g., conflicts, incidences)				
Behavioural Adaptation				
Workload (e.g., visual demand, distraction)				
Usability (e.g., errors, time)				

It was proposed that expert groups be formed to identify further research needs and opportunities associated with filling in the details in the framework. To start the process, recognized experts in each of the four principal safety mechanisms, as identified in the table, would be asked to prepare a brief summary (say 3-pages) of the current state-of-the-art in their area of expertise. This would be followed by formation of expert groups in each area which would organize separate workshops in each area with the specific aim of summarizing current knowledge and formulating research recommendations. A fifth expert group would then consider what driving tasks and driving conditions should be incorporated in the summative evaluations.

The charge to the experts would have to be carefully described to ensure that they fully understand what is requested and that summaries are consistent in scope and detail. Ray Keiffer agreed to help formulate the charge which would be based on the consolidated document being prepared by Ian Noy. This will be prepared for the next WG meeting and discussed.

6. Future Meetings

The next meting of the Expert Group was tentatively scheduled for the afternoon of June3, 1998 in Windsor. Further information will be provided. It was also agreed that Working Group will meet again in November (exact date and venue to be decided).

7. Action items

- Keneo Hiramatsu to compare Japanese Guidelines with the EU Code of Practice: Human Machine Interface, German proposal to WP29 and the BSI Guide to In-Vehicle Information Systems
- WG members to complete and submit surveys by mid-May for inclusion in Version1 of the Database. It was agreed that the members from countries of the project leaders would be responsible to ensure that the information is provided for inclusion in the database. In order to include these surveys in the database, they should be received by May 15, at the latest
- Dr. Friedel to request BASt to perform an initial analysis of the survey results.
- Ian Noy to modify and integrate "Discussion Document" and "ITS Safety Assurance Standard, Draft Outline" as per discussion, and to distribute for comment
- Ian Noy to request NHTSA to consider setting up an IHRA web site
- Geoff Harvey to distribute MISRA guidelines
- Each WG member to identify additional projects that fall within the expanded scope
- Ray Keiffer to help formulate charge to individual experts to produce summaries of state-of-the-art in direct safety effects, behavioural adaptation, workload, and usability.

8. List of Attachments

1. EU Code of Practice: Human Machine Interface (distributed at the meeting)

2. DD 235:1996, Guide to In-Vehicle Information Systems, British Standards Institute (distributed at the meeting)

3. MISRA's "Development Guidelines for Vehicle Based Software" (to follow from Geoff Harvey)